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Editorial

SARS-CoV-2 and other pathogenic microorganisms in the environment



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ABSTRACT

The title of the Virtual Special Issue (VSI) “SARS-CoV-2 and other pathogenic microorganisms in the environment”, clearly indicates a main focus not only on the virus causing the current pandemic, but also on other pathogenic microorganisms and their spatial and temporal dynamics in environmental compartments. Overall, the VSI has received more than 100 submissions relating to most of the possible fields connected to the pandemic, many of them of high scientific value. A rigorous peer-reviewing process has been carried out, with a panel of experts making a great work to evaluate that important number of submissions. As a result, those manuscripts reaching the highest scientific standards were selected for publication. We think that the papers included constitute a set of high-quality contributions, which should help to improve the overall scientific perspective regarding this crucial issue. In this piece, the Editors comment some issues on the papers accepted for publication, and include additional reflections.

1. Introduction

SARS-CoV-2 has caused the COVID-19 pandemic, currently still affecting many geographic areas over the world. This infectious disease -as other caused by different pathogenic microorganisms-needed and still needs to be investigated not only in that related to find a cure and medical treatments for sick people, but also related environmental aspects. Although some of the Guest Editors of this VSI have previously edited other Special Issues focusing on various aspects of this novel coronavirus and other pathogenic microorganisms (Núñez-Delgado, 2020; Núñez-Delgado et al., 2021), additional research is needed.

In fact, human-to-human transmission is a critical factor, but shedding of SARS-CoV-2 virus (and/or other pathogenic microbes) through excreta, reaching wastewater, and then watercourses or other environmental compartments (soil, plants, surface and groundwater, etc.) is of increasing concern. It is especially important in those regions where wastewater collection and treatment are not available, and sanitation is limited. In addition, the effects of weather conditions, as well as those of air pollutants, are being investigated for this virus and other microbes causing epidemics. In this sense, airborne transmission has been considered crucial, now and in the future. The eventual waterborne transmission is also important, with relevance due to wastewater-based epidemiology, and mostly taking into account that future mutations could make more feasible fecal-oral and/or other transmission routes, which highlights the great interest of interdisciplinary research.

Based on the above, the Editors of this VSI launched a Call for Papers in this journal, encouraging authors to submit high quality manuscripts presenting new research results of global relevance, as well as new perspectives or reviews on the matter. It focused on a wide range of environmental aspects related to pathogens with epidemic/pandemic

potential, and especially on SARS-CoV-2 and subsequent mutations of this novel coronavirus.

With more than 100 submissions received, the Editors include below some comments on the papers published and related aspects.

2. Comments on papers published in the virtual special issue

On June 20, 2021, the papers that have been published are the following: Adelodun et al. (2021) prepared a review on monitoring the presence and persistence of SARS-CoV-2 in water-food-environmental compartments. Ahmed et al. (2021) published a study on intraday variability of indicator and pathogenic viruses in 1-h and 24-h composite wastewater samples, in relation to their implications for wastewater-based epidemiology. In turn, Anand et al. (2021a) presented an environmental outlook regarding SARS-CoV-2 and other viruses in soil, while Anand et al. (2021b) showed an interdisciplinary vision for the COVID-19 disease, from transmission to control. On the other hand, Bontempi (2021) reported the Italian “strange” situation in relation to the Europe second wave of COVID-19 infection, while Bontempi and Coccia (2021) focused on international trade as critical parameter of COVID-19 spread that outclasses demographic, economic, environmental, and pollution factors. Byun et al. (2021) performed a critical analysis of empirical and epidemiological studies at global and local scales, with the aim of answering whether COVID-19 is seasonal (or not). The paper by Chen (2021) considered quantifying collective intelligence and behaviors of SARS-CoV-2 via environmental resources from virus’ perspectives, while Chen et al. (2021a) reported the results of an investigation for airflow and deposition of PM2.5 contaminated with SARS-CoV-2 virus in healthy and diseased human airway. Chen et al. (2021b) also detailed an analysis of microparticle deposition in the

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